

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
14 April 2005 (14.04.2005)

PCT

(10) International Publication Number  
**WO 2005/033522 A1**

(51) International Patent Classification<sup>7</sup>: **F04D 19/04**,  
F04B 37/14

(74) Agent: **BOOTH, Andrew, Steven**; The Boc Group Plc,  
Chertsey Road, Windlesham, Surrey GU20 6HJ (GB).

(21) International Application Number:  
PCT/GB2004/004131

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(22) International Filing Date:  
23 September 2004 (23.09.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0322889.7 30 September 2003 (30.09.2003) GB

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (for all designated States except US): **THE  
BOC GROUP PLC** [GB/GB]; Chertsey Road, Windle-  
sham, Surrey GU20 6HJ (GB).

(72) Inventor; and

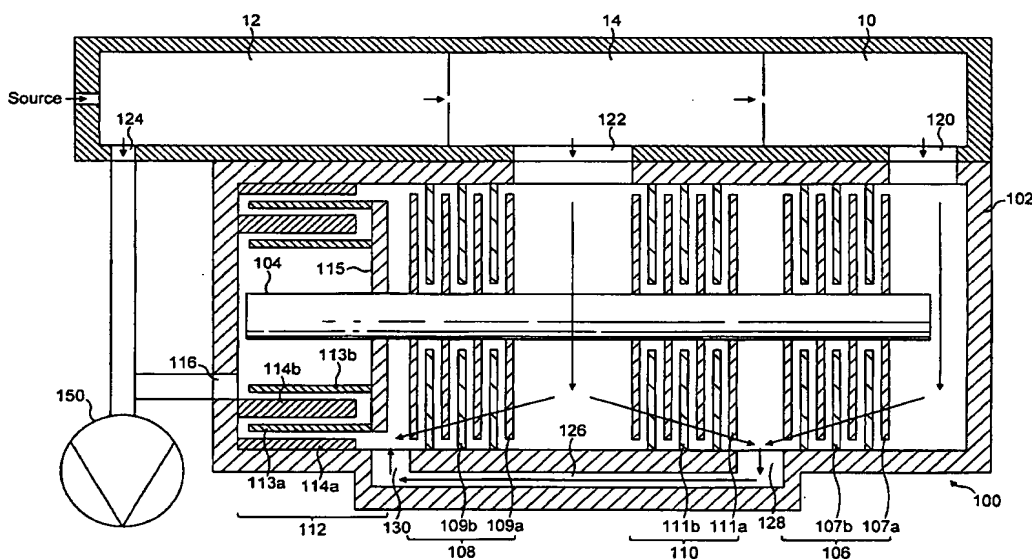
(75) Inventor/Applicant (for US only): **STONES, Ian, David**  
[GB/GB]; c/o BOC Edwards, York Road, Burgess Hill,  
West Sussex RH15 9TT (GB).

Published:

— with international search report

[Continued on next page]

(54) Title: VACUUM PUMP



(57) Abstract: A vacuum pump (100) comprises a first set (106) of turbo-molecular stages, a molecular drag stage (112), a first inlet (120) through which fluid can pass through the first set (106) of stages and the molecular drag stage (112) towards a pump outlet (116), second and third sets (108, 110) of turbo-molecular stages located between the first set (106) and the molecular drag stage (112), a second inlet (122), the second and third sets (108, 110) being arranged such that fluid entering the pump through the second inlet (122) is separated into two streams each flowing through a respective one of the second and third sets (108, 110), and conduit means (126) for conveying fluid passing through the first set (106) and one of the second and third sets (108, 110) towards the outlet (116).



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*